

## CLAIMS

What is claimed is:

1. An optical transmission line for transmitting an optical signal from an optical transmitter to an optical receiver, comprising

a plurality of optical amplification repeaters distributed in said optical transmission line;

wherein said optical transmission line is partitioned into a plurality of transmission spans by said plurality of optical amplification repeaters;

at least one of said transmission spans is provided with a plurality of dispersion compensation elements for compensating for wavelength dispersion caused by said transmission line fiber, said dispersion compensation elements substantially not adding to a length of said span; and

at least one of said plurality of dispersion compensation elements is arranged in said optical amplification repeater.

2. An optical transmission line according to claim 1, wherein:

said optical amplification repeater is provided with a concentrated amplifier for intensively amplifying optical signals in it, and

said concentrated amplifier is arranged behind a dispersion-compensating element arranged in said optical amplification repeater.

3. An optical transmission line according to claim 1, wherein:

said optical amplification repeater is provided with an excitation light source for distributed-amplifying an optical signal and an excited light input means for inputting said excited light into said transmission line fiber, and

said excited light input means is arranged before a dispersion compensation element arranged in said optical amplification repeater.

4. An optical transmission line according to claim 1, wherein said transmission line fiber is a single kind of fiber being  $100\mu\text{m}^2$  or more in effective core sectional area.

5. An optical transmission line according to claim 1, wherein said dispersion compensation element is a dispersion compensation fiber being  $-200\text{ ps/nm/km}$  or less in dispersion value.

6. An optical transmission line according to claim 1, wherein the quantity of variation in accumulated dispersion of said transmission span is  $500\text{ ps/nm}$  or less.

7. An optical transmission line according to claim 1, wherein the absolute value of the sum of the total wavelength dispersion value of said transmission line fiber and the total wavelength dispersion value of said plurality of dispersion compensation elements is not less than  $20\text{ ps/nm}$  and not more than  $60\text{ ps/nm}$ .

8. An optical transmission system comprising an optical

transmission line according to claim 1.

9. An optical transmission system comprising an optical transmission line according to claim 2.

10. An optical transmission system comprising an optical transmission line according to claim 3.

11. An optical transmission system comprising an optical transmission line according to claim 4.

12. An optical transmission system comprising an optical transmission line according to claim 5.

13. An optical transmission system comprising an optical transmission line according to claim 6.

14. An optical transmission system comprising an optical transmission line according to claim 7.